

Exhibit A

NOTEBOOK NO. 2116
ISSUED TO Gerry Wojcik
ON _____ 19____
DEPARTMENT Industrial & Graduate
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Project No. _____

Book No. _____

CHEMIDIZE

Page No. _____

OBJECTIVE: TO DEVELOP A REPLACEMENT FOR THE CURRENT CHEMIDIZE T20 and T27, THAT NOT ONLY PROMOTES SUBSEQUENT COATING ADHESION, BUT GIVES STAND ALONG CORROSION PROTECTION ON ALUMINUM ALLOY 6061

EXPERIMENTAL: UNLESS OTHERWISE NOTED, THE FOLLOWING PROCEDURE WILL BE USED IN ALL EXPERIMENTS:

1. SOAK CLEAN IN ISOPREP 49 L - 5 MIN, 150°F
2. COLD WATER RINSE - 1 MIN.
3. PEOXIDIZE IN 50% NITRIC ACID - 1 MIN, Room Temp.
4. COLD WATER RINSE
5. EXPERIMENTAL CONVERSION COAT - 2 MIN.
6. COLD WATER RINSE
7. BLOW DRY
8. AGE PANEL AT AMBIENT CONDITIONS FOR 24 HOURS
9. NEUTRAL SALT SPRAY

Used & Understood by me, _____

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Book No. _____

CHEMIDIZO

Page No. _____

1.5g ~~FLUO~~ HEXAFLUORO ZIRCONIUM ACIDQ.S. to 500ml $\text{N}/\text{H}_2\text{O}$

2 MIN. IMMERSION @ 90°F

HOURS SALT SPRAY

	<u>pH</u>
ADJUST WITH AMMONIA	2.57
	3.10
	4.05
	5.00
	6.11

96

72

168

72

168

BEST RESULTS TO DATE!! NO VISIBLE COATING UPON INSPECTION. WILL TRY TO CATALYZE MORE SUBSTANTIVE COATING VIA ADDITION OF TUNGSTATE BASED ON COATING WORK WITH Cr^{III}

SOLUTION STAYS CLEAR.

To Page No. _____

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LE CHEMIDIZE

Book No. _____

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1.5g HEXAFLUOROZIRCONIC ACID
 1.5g SODIUM TUNGSTATE
 QS ~ 500 mL H₂O

2 MINUTE IMMERSION @ 90°F

	PM	HOURS	SALT SPRAY
ADJUST w/AMMONIA	2.53		192
	3.01		192
	4.00		168
	5.00		192
	6.03		144

YELLOW PPT FORMS, MAYBE DUE TO INSOLUBLE TUNGSTATE FORMATION. WILL TRY AMMONIUM TUNGSTATES TO IMPROVE STABILITY. WILL MEASURE DISSOLVED ALUMINUM ALSO TO SEE IF THIS IS ESSENTIAL TO IMPROVE SALT SPRAY PERFORMANCE.

SOLUTION STAYS CLEAR

TUNGSTEN DEFINITELY SEEMS TO CATALYZE REACTION ON ALUMINUM SURFACE. BLUE HAZE AT INTERFACE

LIGHT BLUE COATING IS EVIDENT WHEN COMPARED TO UNTREATED PANEL

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Project No. _____

Book No. _____

69

Page No. _____

1.5g HEXAFLUOROZIRCONIC
 1.5g AMMONIUM METATUNGSTATE
 QS. TO 500ML W/ H₂O

5 MINUTE IMMERSION

ADJUST % AMMONIA	pH	AR ppm	HOURS NEUTRAL SALT SPRAY
	2.5	8.0	288
		52.0	960
		93.0	960
		203.0	504
	3.5		
		10.0	984
		48.0	1248
		102.0	1224
		190.0	1008
	5.5		
		8.0	1008
		45.0	1128
		93.0	1224
		187.0	1224

THERE IS A VERY SIGNIFICANT RELATIONSHIP BETWEEN DISSOLVED ALUMINUM AND CORROSION PROTECTION. INCREASE IN SOLUTION CONTACT TIME DID NOT MAKE THE COATING ANY DARKER. THE CLOUD THAT FORMS AT ALUMINUM INTERFACE IS SLIGHTLY PURPLE IN COLOR USING THE AMMONIUM METATUNGSTATE AS OPPOSED TO THE SODIUM TUNGSTATE

BEST RESULTS TO DATE, OUT PERFORMS CPT

SOLUTION STABILITY IS EXCELLENT

To Page No. _____

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